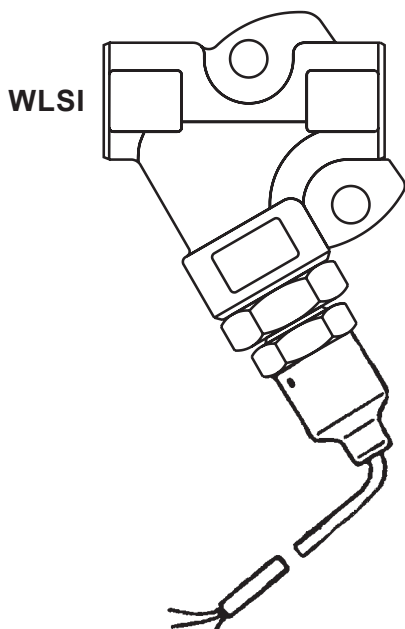
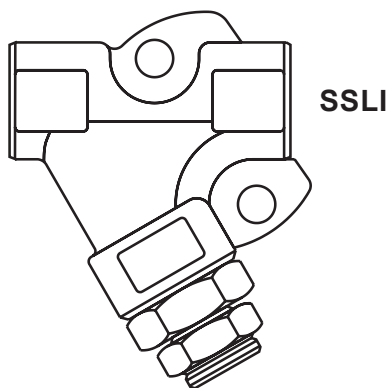


IPC20 and IPC21 Pipeline Connectors

Installation and Maintenance Instructions



1. Safety information
2. Description
3. Installation
4. Maintenance
5. Spare parts

1. Safety information

Isolation

Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

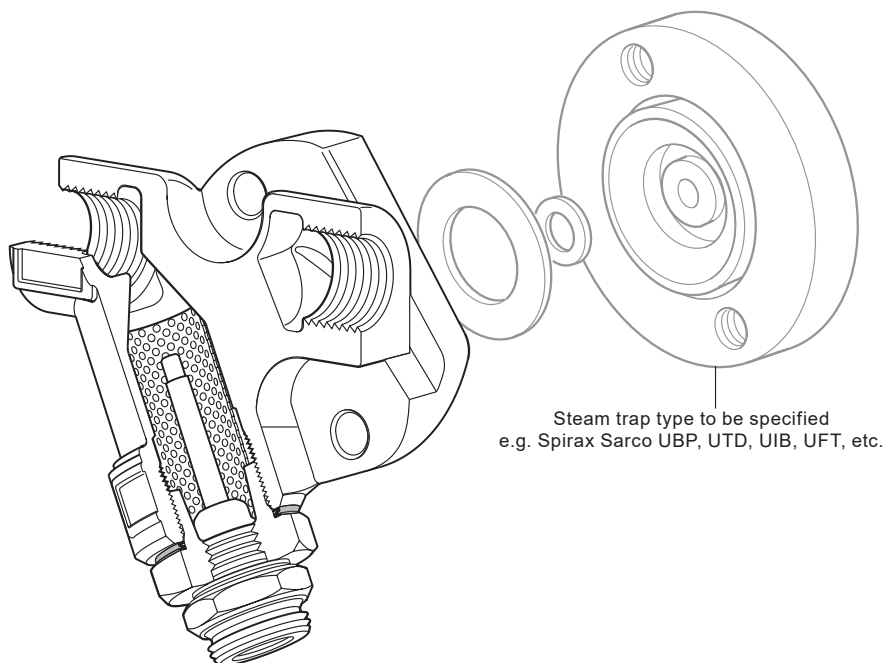
Pressure

Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurization valves type DV (see separate literature for details). Do not assume that the system is depressurized even when a pressure gauge indicates zero.

Temperature

Allow time for temperature to normalize after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.

Note: The integral sensor is supplied as standard with the IPC20 and IPC21 but can be retrofitted to existing PC20 connectors as long as a blowdown valve is not fitted.



SS1 sensor shown

Fig. 1

2. Description

The IPC pipeline connectors are designed for use with swivel connector steam traps. The principle is that the pipeline connector can be fitted into the pipeline, either horizontally or vertically. The steam trap can be fitted afterwards to the connector and can be rotated through 360° to ensure that the trap is in the horizontal plane. The IPC20 and IPC21 have an integral strainer screen. For available trap types see separate literature.

2.1.1 Nomenclature

The IPC20 is an austenitic stainless steel pipeline connector with an integral strainer IPC20 - and sensor, for monitoring trap operation.

For use with UTD and UBP traps only (see TI-P128-17).

The IPC21 is an austenitic stainless steel pipeline connector with an integral strainer IPC21 - and sensor, for monitoring trap operation.

For use with UIB and UFT traps only (see TI-P128-17).

2.1.2 Limiting operating conditions

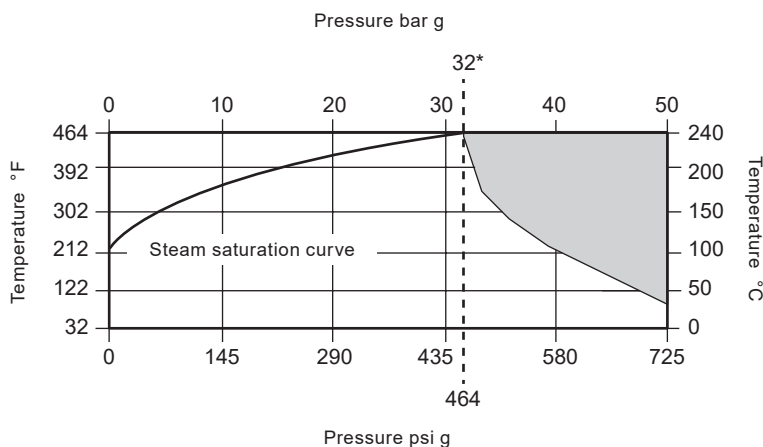
Maximum operating pressure (PMO)	464 psi g (32 bar g) connector only Trap may dictate actual PMO if lower when assembled (See trap TIS sheet)
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Maximum operating temperature (TMO)	464 °F (240 °C)
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2.1.3 Pressure shell design conditions

Maximum operating pressure (PMO)	725 psi g (50 bar g) connector only Trap when mounted to connector may dictate PMA if lower (See trap TIS sheet)
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Maximum operating temperature (TMO)	464 °F (240 °C) Selected trap may lower these values
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The product **must not** be used in this region.

* Maximum operating pressure recommended for saturated steam service.

3. Installation

Note: Please read 'General safety information, Section 1, before commissioning

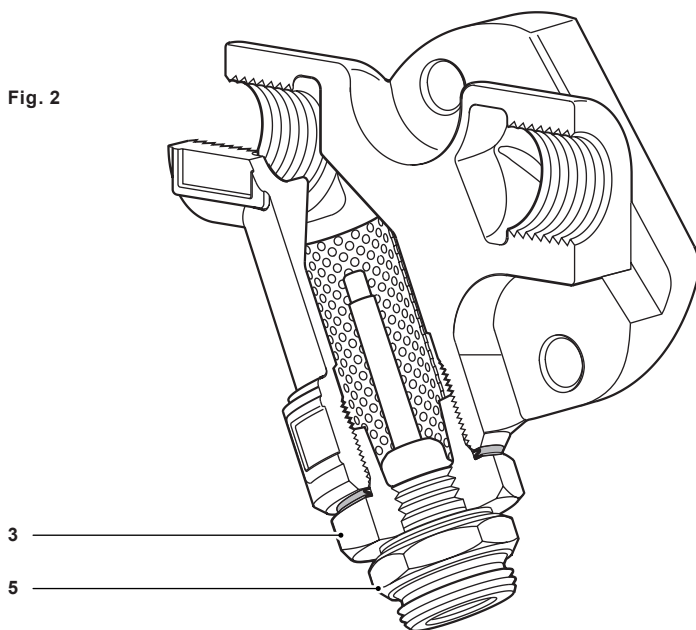
There are two criteria which must be satisfied to ensure that the swivel connector trap will operate correctly and ensure effective condensate removal:

- The IPC should be installed with flow in the direction of the arrow.
- The IPC20 and IPC21 must be fitted in a horizontal line with the sensor at the bottom. (as shown on front page)
- The connection face for the swivel connector steam trap must always be in the vertical plane.
After installation it is recommended that the pipeline connector is insulated to minimize radiated heat losses and to protect personnel from the risk of burns.

Note: Some trap types should not be insulated.

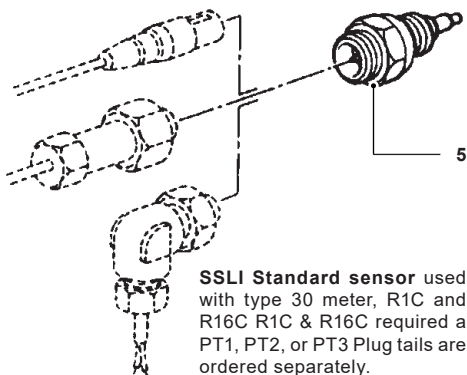
The IPC and trap are joined by a high integrity spirally wound gasketed joint. It is important that no damage is caused, e.g. by weld, weld splatter, knocks, etc. to the trap gasket face. Hence care must be taken when installing the IPC into the pipework. It is recommended that the trap is installed immediately after the IPC is in the pipework. Alternatively, the trap can be joined to the IPC prior to installation.

Fig. 2



3.1 SSLI installation

1. Remove plug from strainer cap (3) and discard. (plug not shown)
2. Install SSL1 (5) sensor into strainer cap make sure gasket is on sensor before threading into the cap. Tighten to a torque of 37-42 ft-lbs using a 24mm A/F wrench.
3. For applications using a R1C, R16C, R1 and R12, a PT1, PT2, or PT3 plug tail must be used to permanently connect the sensor to the monitoring unit. See instructions which come with the monitoring device or remote test point for wiring instructions and maximum wire lengths.
4. When using a type 30 indicator, the unit comes with its own cable. Once the sensor has been installed IP20 and IPC21 are ready to use with the type 30 steam loss detector.



SSLI Standard sensor used with type 30 meter, R1C and R16C R1C & R16C required a PT1, PT2, or PT3 Plug tails are ordered separately.

Fig. 3

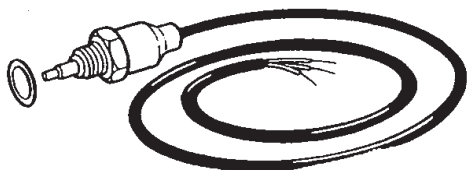


Fig. 4

The WLS1 waterlogging sensor assembly is available in two versions:

1. With a separate diode pack for use with R16C automatic steam trap monitors.
2. Without a diode pack for use with R1C automatic steam trap monitors.

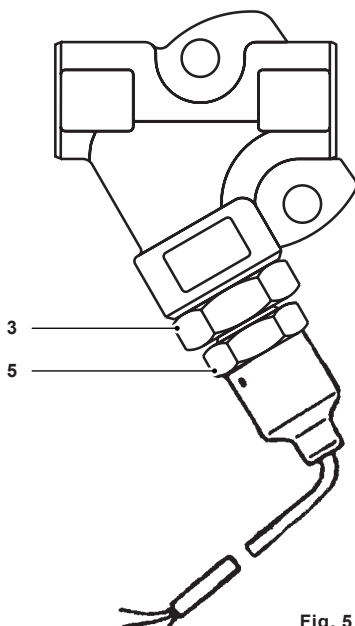


Fig. 5

3.2 WLS1 Installation

1. Remove plug from strainer cap. (3) (plug not shown)
2. Install the WLS1 sensor and cable assembly (5) into the IPC20 (3) or IPC21 taking care not to damage the cable. Tighten to a torque of 37-42 ft-lbs. using a 24mm A/F wrench.
3. For applications using a R16C automatic steam trap monitor, use the diode pack to connect the 3 core sensor cable to the 2 core cable (customer supply) to the R16C as shown. The diode pack may be located within a junction box if required. Maximum recommended distance between the WLS1 sensor and the R16C is 1600 ft.

Take care to observe correct polarity when connecting wires to R16C.

4. For applications using an R1C steam trap failure monitor, the diode pack is not required. Maximum recommended distance between the WLS1 sensor and the R1C is 32 ft. Take care to observe correct polarity when connecting wires to R1C.

Note: For installation in hazardous areas, separate safety barriers must be used as well as the diode pack. Please consult Spirax Sarco for details.

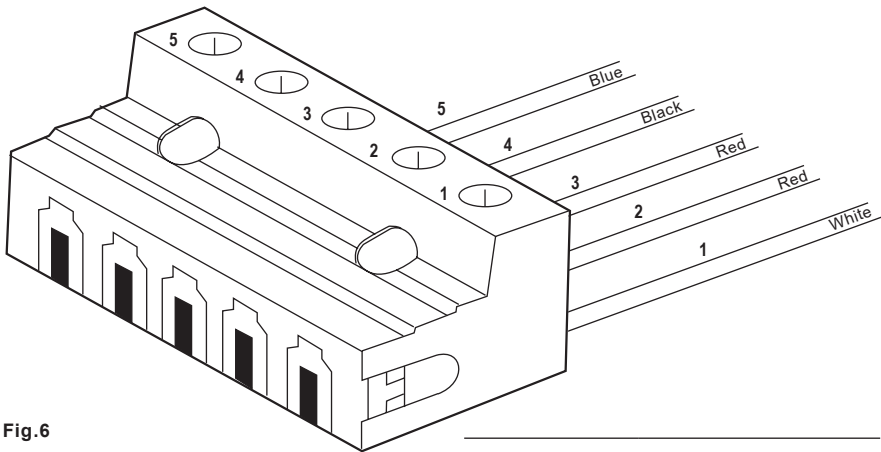


Fig.6

Ports 2 and 5	To WLS1 sensor
Ports 1, 3 and 4	To R16C (1500 ft. max)

4. Maintenance

Note: Before actioning any maintenance program observe the 'Safety information' in Section 1.

5.1 Introduction

All work must be carried out by a suitably competent person. Before starting work ensure that suitable tools are available. Use only Spirax Sarco replacement parts.

5.2 Maintenance

Maintenance can be completed with the connector in the pipeline, once the safety procedures have been observed. It is recommended that new gaskets and spares are used whenever maintenance is undertaken. Ensure that the correct tools and necessary protective equipment are used at all times. When maintenance is complete open isolation valves slowly and check for leaks.

5.2.1 How to replace the strainer screen

Before starting make sure the pipeline connector is isolated from mains pressure (both steam and condensate) and any residual pressure is vented to atmosphere. Allow to cool before commencing work. Remove the strainer cap (or blowdown valve) and separate it from the strainer screen. Once the screen has been cleared or replaced, place it in the recess of the cap with the cap gasket in place and insert into the body. Loosely tighten to ensure the screen and gasket locate correctly. Tighten to the recommended tightening torque. Always use new gaskets.

5.2.2 How to replace or clean the sensor

Before starting make sure the pipeline connector is isolated from mains pressure (both steam and condensate) and any residual pressure is vented to atmosphere. Allow to cool before commencing work. If a waterlogging sensor is fitted, it will be necessary to disconnect the wiring at the terminal block. Remove the sensor from the adaptor. This can be done in line so long as the adaptor is securely held in place. Clean the sensor insulation. If pitting of the insulation occurs, a new sensor should be fitted. Clean or replace the strainer screen (whichever action is appropriate for the condition of the screen). Replace the new sensor and screw into the adaptor, ensuring the gasket and strainer screen are centralised. Tighten to the recommended tightening torque. Reconnect the waterlogging sensor as described under installation of WLS1.

5. Spare parts

Available spares

The spare parts available are detailed below. No other parts are supplied as spares.

Strainer screen and gasket	SS1 for use with IPC20	2, 4
	SSL1 for use with IPC21	
Integral sensor and gasket	WLS1 with diode for use with IPC20 + R16C	5, 6
	WLS1 with diode for use with IPC21 + R16C	
	WLS1 for use with IPC20 + R1C	
	WLS1 for use with IPC21 + R1C	
Hydrostatic blind flange test kit		

How to order spares

Always order spares using the description given in the column headed Available spares and state model number.

Example: 1 — strainer screen and gasket for ½" IPC20 connector.

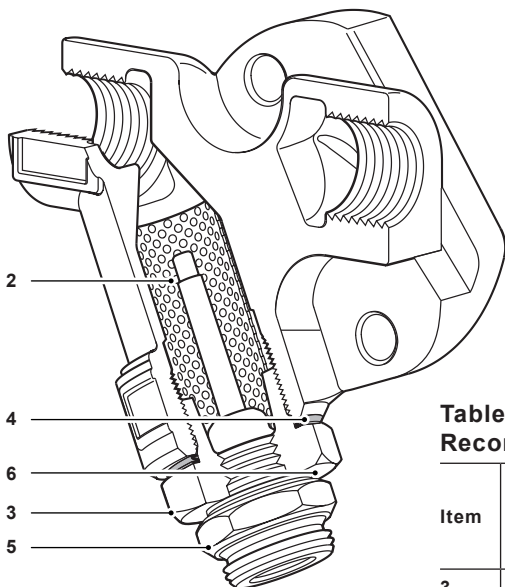




Table 1
Recommended tightening torques

Item		or mm		ft lbf
3	32 A/F	M28 x 1.5P		126 - 140
5	24 A/F			37 - 41

**For any additional information you may require, contact:
Spirax Sarco Applications Engineering Department
Toll Free 1-800-883-4411**

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